

C L A I M S

1. A locomotive endoscope assembly comprising:
a locomotive endoscope head, including a main portion extending along a longitudinal axis and having a first selectably inflatable balloon associated therewith and a selectably positionable portion, selectably axially positionable along said main portion and having a second selectably inflatable balloon associated therewith; and
a locomotive endoscope head controller controlling the operation of the locomotive endoscope head and being operative for controlling positioning of said selectably positionable portion relative to said main portion and selectable inflation of said first and second selectably inflatable balloons.
2. A locomotive endoscope assembly according to claim 1 and wherein at least one of said first and second selectably inflatable balloons comprises a stretchable balloon.
3. A locomotive endoscope assembly according to either of claims 1 and 2 and also comprising an endoscope body associated with said locomotive endoscope head.
4. A locomotive endoscope assembly according to claim 3 and wherein an instrument channel at least partially extends through said locomotive endoscope head and said endoscope body.
5. A locomotive endoscope assembly according to any of the preceding claims and wherein said locomotive endoscope head has a fixed length.
6. A locomotive endoscope assembly according to any of claims 3 – 5 and wherein said endoscope body comprises a multi-lumen tube.
7. A locomotive endoscope assembly according to any of claims 3 – 6 and wherein said endoscope body interfaces with said locomotive endoscope head controller.

8. A locomotive endoscope assembly according to any of the preceding claims and also comprising an endoscopy system to which said locomotive endoscope head controller is connectable.
9. A locomotive endoscope assembly according to any of claims 6 – 8 and wherein said multi-lumen tube includes at least one lumen operative for at least one of:
- balloon inflation;
 - positioning of said selectably positionable portion of said locomotive endoscope head;
 - passage therethrough of at least one of an optical fiber and an electrical conductor bundle; and
 - fluid communication.
10. A locomotive endoscope assembly according to any of claims 6 – 9 and wherein said multi-lumen tube includes at least one lumen operative for each of:
- balloon inflation;
 - positioning of said selectably positionable portion of said locomotive endoscope head; and
 - passage therethrough of at least one of an optical fiber and an electrical conductor bundle.
11. A locomotive endoscope assembly according to either of claims 9 and 10 and wherein said at least one lumen includes at least one first lumen operative for inflation of said first selectably inflatable balloon and at least one second lumen operative for inflation of said second selectably inflatable balloon.
12. A locomotive endoscope assembly according to any of the preceding claims and wherein said selectably positionable portion is slidably positionable with respect to said main portion.
13. A locomotive endoscope assembly according to any of the preceding claims and wherein said locomotive endoscope head comprises at least one light source and at least one imaging sensor.

14. A locomotive endoscope assembly according to any of the preceding claims and wherein said first selectably inflatable balloon comprises at least two independently inflatable balloon portions.

15. A locomotive endoscope assembly according to any of the preceding claims and wherein said second selectably inflatable balloon comprises at least two independently inflatable balloon portions.

16. A locomotive endoscope assembly according to claims 14 and 15 and wherein said at least two independently inflatable balloon portions of said second selectably inflatable balloon are azimuthally offset with respect to said at least two independently inflatable balloon portions of said first selectably inflatable balloon.

17. A locomotive endoscope assembly according to any of the preceding claims and wherein said locomotive endoscope head controller provides locomotive functionality adapted to sequentially displace said locomotive endoscope head through a generally tubular body portion.

18. A locomotive endoscope assembly according to claim 17 and wherein said locomotive functionality includes functionality providing the following sequential operations:

inflating said first selectably inflatable balloon, thereby anchoring said first selectably inflatable balloon to an interior surface of said generally tubular body portion;

axially repositioning said selectably positionable portion and said second selectably inflatable balloon relative to said first selectably inflatable balloon;

inflating said second selectably inflatable balloon, thereby anchoring said second selectably inflatable balloon to an interior surface of said generally tubular body portion;

deflating said first selectably inflatable balloon, thereby unanchoring said first selectably inflatable balloon from said interior surface of said generally tubular body portion; and

axially repositioning said first selectably inflatable balloon relative to said selectably positionable portion and said second selectably inflatable balloon.

19. A locomotive endoscope assembly according to claim 18 and wherein said first selectably inflatable balloon is arranged with respect to said generally tubular body portion to be forward of said second selectably inflatable balloon.

20. A locomotive endoscope assembly according to claim 18 and wherein said second selectably inflatable balloon is arranged with respect to said generally tubular body portion to be forward of said first selectably inflatable balloon.

21. A locomotive endoscope assembly comprising:

a locomotive endoscope head, including a main portion extending along a longitudinal axis and having a first selectably radially extendible element associated therewith and a selectably positionable portion, selectably axially positionable along said main portion and having a second selectably radially extendible element associated therewith; and

a locomotive endoscope head controller controlling the operation of the locomotive endoscope head and being operative for controlling positioning of said selectably positionable portion relative to said main portion and selectable extension of said first and second selectably radially extendible elements.

22. A locomotive endoscope assembly according to claim 21 and wherein at least one of said first and second selectably radially extendible elements comprises a selectably inflatable balloon.

23. A locomotive endoscope assembly according to claim 22 and wherein said selectably inflatable balloon comprises a stretchable balloon.

24. A locomotive endoscope assembly according to any of claims 21 – 23 and also comprising an endoscope body associated with said locomotive endoscope head.

25. A locomotive endoscope assembly according to claim 24 and wherein an instrument channel at least partially extends through said locomotive endoscope head and said endoscope body.
26. A locomotive endoscope assembly according to any of claims 21 – 25 and wherein said locomotive endoscope head has a fixed length.
27. A locomotive endoscope assembly according to any of claims 24 – 26 and wherein said endoscope body comprises a multi-lumen tube.
28. A locomotive endoscope assembly according to any of claims 24 – 27 and wherein said endoscope body interfaces with said locomotive endoscope head controller.
29. A locomotive endoscope assembly according to any of claims 21 – 28 and also comprising an endoscopy system to which said locomotive endoscope head controller is connectable.
30. A locomotive endoscope assembly according to any of claims 27 – 29 and wherein said multi-lumen tube includes at least one lumen operative for at least one of:
- radially extendible element extension;
 - positioning of said selectably positionable portion of said locomotive endoscope head;
 - passage therethrough of at least one of an optical fiber and an electrical conductor bundle; and
 - fluid communication.
31. locomotive endoscope assembly according to any of claims 27 – 30 and wherein said multi-lumen tube includes at least one lumen operative for each of:
- radially extendible element extension;
 - positioning of said selectably positionable portion of said locomotive endoscope head; and

passage therethrough of at least one of an optical fiber and an electrical conductor bundle.

32. A locomotive endoscope assembly according to either of claims 30 and 31 and wherein said at least one lumen includes at least one first lumen operative for extension of said first selectably radially extendible element and at least one second lumen operative for extension of said second selectably radially extendible element.

33. A locomotive endoscope assembly according to any of claims 21 – 32 and wherein said selectably positionable portion is slidably positionable with respect to said main portion.

34. A locomotive endoscope assembly according to any of claims 21 – 33 and wherein said locomotive endoscope head comprises at least one light source and at least one imaging sensor.

35. A locomotive endoscope assembly according to any of claims 21 – 34 and wherein said first selectably radially extendible element comprises at least two independently extendible element portions.

36. A locomotive endoscope assembly according to any of claims 21 – 35 and wherein said second selectably radially extendible element comprises at least two independently extendible element portions.

37. A locomotive endoscope assembly according to claims 35 and 36 and wherein said at least two independently extendible element portions of said second selectably radially extendible element are azimuthally offset with respect to said at least two independently extendible element portions of said first selectably radially extendible element.

38. A locomotive endoscope assembly according to any of claims 21 – 37 and wherein said locomotive endoscope head controller provides locomotive functionality adapted to sequentially displace said locomotive endoscope head through a generally tubular body portion.

39. A locomotive endoscope assembly according to claim 38 and wherein said locomotive functionality includes functionality providing the following sequential operations:

extending said first selectably radially extendible element, thereby anchoring said first selectably radially extendible element to an interior surface of said generally tubular body portion;

axially repositioning said selectably positionable portion and said second selectably radially extendible element relative to said first selectably radially extendible element;

extending said second selectably radially extendible element, thereby anchoring said second selectably radially extendible element to an interior surface of said generally tubular body portion;

retracting said first selectably radially extendible element, thereby unanchoring said first selectably radially extendible element from said interior surface of said generally tubular body portion; and

axially repositioning said first selectably radially extendible element relative to said selectably positionable portion and said second selectably radially extendible element.

40. A locomotive endoscope assembly according to claim 39 and wherein said first selectably radially extendible element is arranged with respect to said generally tubular body portion to be forward of said second selectably radially extendible element.

41. A locomotive endoscope assembly according to claim 39 and wherein said second selectably radially extendible element is arranged with respect to said generally tubular body portion to be forward of said first selectably radially extendible element.

42. An endoscope assembly comprising:

an endoscope head extending along a longitudinal axis and having a first plurality of selectably inflatable balloons associated therewith at at least one first

axial location therealong and a second plurality of selectably inflatable balloons associated therewith at at least one second axial location therealong; and

an endoscope head controller being operative for controlling selectable inflation of said first and second pluralities of selectably inflatable balloons for selectable positioning of said endoscope head.

43. An endoscope assembly according to claim 42 and wherein said endoscope head controller is operative for controlling selectable inflation of said first and second pluralities of selectably inflatable balloons for selectable parallel off-center orientation of said endoscope head.

44. An endoscope assembly according to either of claims 42 and 43 and wherein said endoscope head controller is operative for controlling selectable inflation of said first and second pluralities of selectably inflatable balloons for selectable tilted orientation of said endoscope head.

45. An endoscope assembly according to any of claims 42 - 44 and wherein at least one of said first and second pluralities of selectably inflatable balloons comprises a plurality of balloons distributed generally azimuthally about said endoscope head.

46. An endoscope assembly according to any of claims 42 - 45 and wherein at least one balloon of said first and second pluralities of selectably inflatable balloons comprises a stretchable balloon.

47. An endoscope assembly according to any of claims 42 - 46 and wherein said endoscope head comprises a locomotive endoscope head.

48. An endoscope assembly according to claim 47 and wherein said locomotive endoscope head comprises a main portion extending along a longitudinal axis and associated with said first plurality of selectably inflatable balloons, and a selectably positionable portion, selectably axially positionable along said main portion and associated with said second plurality of selectably inflatable balloons.

49. An endoscope assembly according to any of claims 42 – 48 and also comprising an endoscope body associated with said endoscope head.

50. An endoscope assembly according to claim 49 and wherein an instrument channel at least partially extends through said endoscope head and said endoscope body.

51. An endoscope assembly according to any of claims 42 – 50 and wherein said endoscope head has a fixed length.

52. An endoscope assembly according to any of claims 49 – 51 and wherein said endoscope body comprises a multi-lumen tube.

53. An endoscope assembly according to any of claims 49 – 52, and wherein said endoscope body interfaces with said endoscope head controller.

54. An endoscope assembly according to any of claims 42 – 53 and also comprising an endoscopy system to which said endoscope head controller is connectable.

55. An endoscope assembly according to any of claims 52 – 54 and wherein said multi-lumen tube includes at least one lumen operative for at least one of:

- balloon inflation;
- positioning of said selectably positionable portion of said endoscope head;
- passage therethrough of at least one of an optical fiber and an electrical conductor bundle; and
- fluid communication.

56. An endoscope assembly according to any of claims 52 – 55 and wherein said multi-lumen tube includes at least one lumen operative for each of:

- balloon inflation;
- positioning of said selectably positionable portion of said endoscope head;

and

passage therethrough of at least one of an optical fiber and an electrical conductor bundle.

57. An endoscope assembly according to any of claims 48 – 56 and wherein said selectably positionable portion is slidably positionable with respect to said main portion.

58. An endoscope assembly according to any of claims 42 – 57 and wherein said endoscope head comprises at least one light source and at least one imaging sensor.

59. An endoscope assembly according to any of claims 42 – 58 and wherein said first plurality of selectably inflatable balloons comprises at least two independently inflatable balloon portions.

60. An endoscope assembly according to any of claims 42 – 59 and wherein said second plurality of selectably inflatable balloons comprises at least two independently inflatable balloon portions.

61. An endoscope assembly according to claims 59 and 60 and wherein said at least two independently inflatable balloon portions of said second plurality of selectably inflatable balloons are azimuthally offset with respect to said at least two independently inflatable balloon portions of said first plurality of selectably inflatable balloons.

62. An endoscope assembly according to any of claims 42 – 61 and wherein said endoscope head controller provides locomotive functionality adapted to sequentially displace said endoscope head through a generally tubular body portion.

63. An endoscope assembly according to claim 62 and wherein said locomotive functionality includes functionality providing the following sequential operations:

inflating at least part of said first plurality of selectably inflatable balloons, thereby anchoring said first plurality of selectably inflatable balloons to an interior surface of said generally tubular body portion;

axially repositioning said selectably positionable portion and said second plurality of selectably inflatable balloons relative to said first plurality of selectably inflatable balloons;

inflating at least part of said second plurality of selectably inflatable balloons, thereby anchoring said second plurality of selectably inflatable balloons to an interior surface of said generally tubular body portion;

deflating said first plurality of selectably inflatable balloons, thereby unanchoring said first plurality of selectably inflatable balloons from said interior surface of said generally tubular body portion; and

axially repositioning said first plurality of selectably inflatable balloons relative to said selectably positionable portion and said second plurality of selectably inflatable balloons.

64. An endoscope assembly according to claim 63 and wherein said first plurality of selectably inflatable balloons is arranged with respect to said generally tubular body portion to be generally forward of said second plurality of selectably inflatable balloons.

65. An endoscope assembly according to claim 63 and wherein said second plurality of selectably inflatable balloons is arranged with respect to said generally tubular body portion to be generally forward of said first plurality of selectably inflatable balloons.

66. An endoscope assembly comprising:

an endoscope head extending along a longitudinal axis and having a first plurality of selectably radially extendible elements associated therewith at at least one first axial location therealong and a second plurality of selectably radially extendible elements associated therewith at at least one second axial location therealong; and

an endoscope head controller being operative for controlling selectable extension of said first and second pluralities of selectably radially extendible elements for selectable positioning of said endoscope head.

67. An endoscope assembly according to claim 66 and wherein said endoscope head controller is operative for controlling selectable extension of said first and

second pluralities of selectably radially extendible elements for selectable parallel off-center orientation of said endoscope head.

68. An endoscope assembly according to either of claims 66 and 67 and wherein said endoscope head controller is operative for controlling selectable extension of said first and second pluralities of selectably radially extendible elements for selectable tilted orientation of said endoscope head.

69. An endoscope assembly according to any of claims 66 – 68 and wherein at least one of said first and second pluralities of selectably radially extendible elements comprises a plurality of radially extendible elements distributed generally azimuthally about said endoscope head.

70. An endoscope assembly according to any of claims 66 – 69 and wherein said endoscope head comprises a locomotive endoscope head.

71. An endoscope assembly according to claim 70 and wherein said locomotive endoscope head comprises a main portion extending along a longitudinal axis and associated with said first plurality of selectably radially extendible elements, and a selectably positionable portion, selectably axially positionable along said main portion and associated with said second plurality of selectably radially extendible elements.

72. An endoscope assembly according to any of claims 66 – 71 and wherein at least one of said first and second pluralities of selectably radially extendible elements comprises a plurality of selectably inflatable balloons.

73. An endoscope assembly according to claim 72 and wherein at least one balloon of said plurality of selectably inflatable balloons comprises a stretchable balloon.

74. An endoscope assembly according to any of claims 66 – 73 and also comprising an endoscope body associated with said endoscope head.

75. An endoscope assembly according to claim 74 and wherein an instrument channel at least partially extends through said endoscope head and said endoscope body.
76. An endoscope assembly according to any of claims 66 – 75 and wherein said endoscope head has a fixed length.
77. An endoscope assembly according to any of claims 74 – 76 and wherein said endoscope body comprises a multi-lumen tube.
78. An endoscope assembly according to any of claims 74 – 77, and wherein said endoscope body interfaces with said endoscope head controller.
79. An endoscope assembly according to any of claims 66 – 78 and also comprising an endoscopy system to which said endoscope head controller is connectable.
80. An endoscope assembly according to any of claims 77 – 79 and wherein said multi-lumen tube includes at least one lumen operative for at least one of:
radially extendible element extension;
positioning of said selectably positionable portion of said endoscope head;
passage therethrough of at least one of an optical fiber and an electrical conductor bundle; and
fluid communication.
81. An endoscope assembly according to any of claims 77 – 80 and wherein said multi-lumen tube includes at least one lumen operative for each of:
radially extendible element extension;
positioning of said selectably positionable portion of said endoscope head;
and
passage therethrough of at least one of an optical fiber and an electrical conductor bundle.

82. An endoscope assembly according to any of claims 71 – 81 and wherein said selectably positionable portion is slidably positionable with respect to said main portion.

83. An endoscope assembly according to any of claims 66 – 82 and wherein said endoscope head comprises at least one light source and at least one imaging sensor.

84. An endoscope assembly according to any of claims 66 – 83 and wherein said first plurality of selectably radially extendible elements comprises at least two independently selectably radially extendible elements.

85. An endoscope assembly according to any of claims 66 – 84 and wherein said second plurality of selectably radially extendible elements comprises at least two independently selectably radially extendible elements.

86. An endoscope assembly according to claims 84 and 85 and wherein said at least two independently selectably radially extendible elements of said second plurality of selectably radially extendible elements are azimuthally offset with respect to said at least two independently selectably radially extendible elements of said first plurality of selectably radially extendible elements.

87. An endoscope assembly according to any of claims 66 – 86 and wherein said endoscope head controller provides locomotive functionality adapted to sequentially displace said endoscope head through a generally tubular body portion.

88. An endoscope assembly according to claim 87 and wherein said locomotive functionality includes functionality providing the following sequential operations:

extending at least part of said first plurality of selectably radially extendible elements, thereby anchoring said first plurality of selectably radially extendible elements to an interior surface of said generally tubular body portion;

axially repositioning said selectably positionable portion and said second plurality of selectably radially extendible elements relative to said first plurality of selectably radially extendible elements;

extending at least part of said second plurality of selectably radially extendible elements, thereby anchoring said second plurality of selectably radially extendible elements to an interior surface of said generally tubular body portion;

retracting said first plurality of selectably radially extendible elements, thereby unanchoring said first plurality of selectably radially extendible elements from said interior surface of said generally tubular body portion; and

axially repositioning said first plurality of selectably radially extendible elements relative to said selectably positionable portion and said second plurality of selectably radially extendible elements.

89. An endoscope assembly according to claim 88 and wherein said first plurality of selectably radially extendible elements is arranged with respect to said generally tubular body portion to be generally forward of said second plurality of selectably radially extendible elements.

90. An endoscope assembly according to claim 88 and wherein said second plurality of selectably radially extendible elements is arranged with respect to said generally tubular body portion to be generally forward of said first plurality of selectably radially extendible elements.

91. Apparatus for fluid supply to the interior of a portion of a tubular body portion comprising:

an element extending along a longitudinal axis and having at least one first selectably extendible tubular body portion sealing element associated therewith at a first axial location therealong and at least one second tubular body portion sealing element associated therewith at a second axial location therealong;

a controller for selectably extending said at least one first and second tubular body portion sealing elements within a tubular body portion to define a sealed region therebetween; and

a fluid supply functionality supplying a fluid to said sealed region.

92. Apparatus for fluid supply according to claim 91 and wherein at least one of said first and second tubular body portion sealing elements comprises a selectably inflatable balloon.

93. Apparatus for fluid supply according to claim 92 and wherein said selectably inflatable balloon comprises a stretchable balloon.

94. Apparatus for fluid supply according to either of claims 92 and 93 and wherein said selectably inflatable balloon comprises a plurality of selectably inflatable balloon portions.

95. Apparatus for fluid supply according to any of claims 91 – 94 and wherein said apparatus comprises a locomotive endoscope head.

96. Apparatus for fluid supply according to any of claims 91 – 95 and also comprising at least one fluid supply reservoir which is operative to supply said fluid to said sealed region.

97. Apparatus for fluid supply according to any of claims 91 – 96 and also comprising fluid suction functionality for suctioning fluid from said sealed region.

98. Apparatus for fluid supply to the interior of a portion of a tubular body portion comprising:

- a multi-lumen tube comprising at least first, second and third lumens extending therethrough;

- a forward selectably inflatable balloon in fluid communication with said first lumen, said forward selectably inflatable balloon being operative to seal said tubular body portion when inflated;

- a rear selectably inflatable balloon in fluid communication with said second lumen, said rear selectably inflatable balloon being operative to seal said tubular body portion when inflated;

- a fluid supply outlet, located intermediate said forward and rear selectably inflatable balloons, said outlet being in fluid communication with said third lumen;
- and

- a controller for selectably inflating said first and second selectably inflatable balloons within a tubular body portion to define a sealed region therebetween and for supplying a fluid to said sealed region.

99. An endoscope assembly comprising:
- an endoscope tube having an instrument channel;
 - an endoscope tool arranged to travel along said instrument channel to a utilization location forward of said endoscope tube, said endoscope tool being slidably and sealingly located within said instrument channel; and
 - a fluid endoscope tool positioner for selectably pressurizing said instrument channel for providing fluid driven desired positioning of said endoscope tool along said instrument channel.
100. An endoscope assembly according to claim 99 and wherein said endoscope tool includes a piston-defining portion sealingly and slidably engaging said instrument channel.
101. An endoscope assembly comprising:
- a tube having at least one lumen;
 - an endoscope tool arranged to travel through said at least one lumen, said endoscope tool including a stretchable selectably inflatable anchoring balloon.
102. An endoscope assembly comprising:
- a tube having at least one lumen;
 - an endoscope tool arranged to travel along said at least one lumen to a utilization location forward of said tube, said endoscope tool being selectably bendable forwardly of said tube.
103. An endoscope assembly comprising:
- a tube having at least one lumen;
 - an endoscope tool arranged to travel along said at least one lumen, said endoscope tool including a tool head and a multi-lumen tube connected to said tool head.
104. An endoscope assembly according to either of claims 102 and 103 and wherein said endoscope tool includes a stretchable selectably inflatable anchoring balloon.

105. An endoscope assembly according to claim 103 and wherein said endoscope tool is selectably bendable forwardly of said tube.

106. An endoscope assembly according to claim 105 and wherein said endoscope tool includes a stretchable selectably inflatable anchoring balloon.

107. An endoscope assembly according to any of claims 101 – 106 and wherein said tube comprises an endoscope tube.

108. An endoscope assembly according to any of claims 101 – 108 and wherein said at least one lumen comprises instrument channel.

109. An endoscope assembly according to any of claims 104 and 106 – 108 and wherein said multi-lumen tube includes at least a first lumen for inflation and deflation of said stretchable selectably inflatable anchoring balloon and a second lumen.

110. An endoscope assembly according to claim 109 and also comprising a tensioning wire which extends through said second lumen and which is operative for selectably bending said endoscope tool forwardly of said tube.

111. An endoscope assembly according to any of claims 101 – 110 and wherein said endoscope tool is generally more flexible than said tube.

112. An endoscope assembly according to any of claims 107 – 111 and also comprising an endoscopy system to which said endoscope tube is connectable.

113. An endoscope assembly according to any of claims 101 – 112 and also comprising an endoscope tool positioning control device and a balloon inflation/deflation control.

114. An endoscope assembly according to any of claims 101 – 113 and also comprising a tool port associated with said tube which is operative for insertion and removal of said endoscope tool.
115. An endoscope assembly comprising:
an endoscope tube, said endoscope tube having a first stretchable selectably inflatable anchoring balloon adjacent a forward end thereof; and
an endoscope tool arranged to travel relative to said endoscope tube to a utilization location forward of said endoscope tube, said endoscope tool having a second stretchable selectably inflatable anchoring balloon adjacent a forward end thereof.
116. An endoscope assembly according to claim 115 and wherein said endoscope tool is selectably bendable forwardly of said endoscope tube.
117. An endoscope assembly according to either of claims 115 and 116 and wherein said endoscope tool includes a tool head and a multi-lumen tube connected to said tool head.
118. An endoscope assembly according to claim 117 and wherein said multi-lumen tube includes at least a first lumen for inflation and deflation of said second stretchable selectably inflatable anchoring balloon and a second lumen.
119. An endoscope assembly according to claim 118 and also comprising a tensioning wire which extends through said second lumen and which is operative for selectably bending said endoscope tool forwardly of said endoscope tube.
120. An endoscope assembly according to any of claims 115 – 119 and wherein said endoscope tool is generally more flexible than said endoscope tube.
121. An endoscope assembly according to any of claims 115 – 120 and also comprising an endoscopy system to which said endoscope tube is connectable.

122. An endoscope assembly according to any of claims 115 – 121 and also comprising an endoscope tool positioning control device and at least one balloon inflation/deflation control.

123. An endoscope assembly according to any of claims 115 – 122 and also comprising a tool port associated with said endoscope tube which is operative for insertion and removal of said endoscope tool.

124. An endoscope assembly comprising:

a locomotive endoscope including a locomotive endoscope head and an endoscope body adapted for locomotion through a tubular body portion and for anchoring at a desired location in said tubular body portion; and

an endoscopy tool adapted for displacement along said endoscope body to a desired tool operation location.

125. An endoscope assembly according to claim 124 and also comprising at least one selectably radially extendible element associated with said locomotive endoscope head and adapted for anchoring said locomotive endoscope head at a desired location in said tubular body portion.

126. An endoscope assembly according to claim 125 and wherein said at least one selectably radially extendible element comprises a selectably inflatable anchoring balloon.

127. An endoscope assembly according to any of claims 124 – 126 and wherein said locomotive endoscope head comprises at least one light source and at least one imaging sensor.

128. An endoscope assembly according to any of claims 124 – 127 and also comprising an overtube which is slidable along said endoscope body.

129. An endoscope assembly according to claim 128 and wherein said overtube is associated with said endoscopy tool.

130. An endoscope assembly according to either of claims 128 and 129 and wherein said endoscope body is adapted to function as a guide wire for said overtube.
131. An endoscope assembly according to any of claims 124 – 130 and wherein said endoscopy tool comprises a therapeutic tool.
132. An endoscope assembly according to any of claims 124 – 131 and wherein said endoscopy tool comprises a diagnostic tool.
133. An endoscope assembly according to any of claims 124 – 132 and wherein said endoscopy tool comprises a surgical tool.
134. A locomotive endoscopy method comprising:
providing a locomotive endoscope head, including a main portion extending along a longitudinal axis and having a first selectably radially extendible element associated therewith and a selectably positionable portion, selectably axially positionable along said main portion and having a second selectably radially extendible element associated therewith; and
providing locomotion of said locomotive endoscope head by selectably positioning said slidable portion relative to said main portion and selectably extending and retracting said first and second selectably radially extendible elements.
135. A locomotive endoscopy method according to claim 134 and wherein at least one of said first and second selectably radially extendible elements comprises a selectably inflatable balloon.
136. A locomotive endoscopy method according to either of claims 134 and 135 and also comprising positioning said locomotive endoscope head in a selectably non-parallel orientation relative to a tubular body portion by selectably non-identically extending at least two independently radially extendible element portions of said first selectably radially extendible element and at least two independently radially extendible element portions of said second selectably radially extendible element.

137. A locomotive endoscopy method according to any of claims 134 - 136 and also comprising positioning said locomotive endoscope head in a selectably off-center parallel orientation relative to a tubular body portion by selectably non-identically extending at least two independently radially extendible element portions of said first selectably radially extendible element and at least two independently radially extendible element portions of said second selectably radially extendible element.

138. A locomotive endoscopy method according to any of claims 134 - 137 and wherein providing locomotion includes sequentially displacing said locomotive endoscope head through a generally tubular body portion.

139. A locomotive endoscopy method according to any of claims 134 - 138 and wherein providing locomotion includes sequentially displacing said locomotive endoscope head through at least one of a large intestine, a small intestine, an artery and a vein.

140. A locomotive endoscopy method according to either of claims 138 and 139 and wherein said sequentially displacing includes the following sequential operations:

extending said first selectably radially extendible element, thereby anchoring said first selectably radially extendible element to an interior surface of said generally tubular body portion;

axially repositioning said selectably positionable portion and said second selectably radially extendible element relative to said first selectably radially extendible element;

inflating said second selectably radially extendible element, thereby anchoring said second selectably radially extendible element to an interior surface of said generally tubular body portion;

deflating said first selectably radially extendible element, thereby unanchoring said first selectably radially extendible element from said interior surface of said generally tubular body portion; and

axially repositioning said first selectably radially extendible element relative to said selectably positionable portion and said second selectably radially extendible element.

141. An endoscope positioning method comprising:
providing an endoscope head extending along a longitudinal axis and having a first plurality of selectably radially extendible elements associated therewith at at least a first axial location therealong and a second plurality of selectably radially extendible elements associated therewith at at least a second axial location therealong;
and
selectably positioning said endoscope head by selectable extension of said first and second pluralities of selectably radially extendible elements.
142. An endoscope positioning method according to claim 141 and wherein at least one of said first and second pluralities of selectably radially extendible elements comprises a plurality of radially extendible elements distributed azimuthally about said endoscope head and said positioning said endoscope head includes selectable extension of individual ones of said plurality of radially extendible elements.
143. An endoscope positioning method according to either of claims 141 and 142 and wherein at least one selectably radially extendible element of said first and second pluralities of selectably radially extendible elements comprises an inflatable balloon.
144. A method for fluid supply to the interior of a portion of a tubular body portion comprising:
providing an element extending along a longitudinal axis and having at least one first selectably extendible tubular body portion sealing element associated therewith at a first axial location therealong and at least one second tubular body portion sealing element associated therewith at a second axial location therealong;
extending said at least one first and second tubular body portion sealing elements within a tubular body portion to define a sealed region therebetween; and
supplying a fluid to said sealed region.
145. A method for fluid supply according to claim 144 and wherein said supplying a fluid comprises supplying a therapeutic fluid.

146. A method for fluid supply according to claim 144 and wherein said supplying a fluid comprises supplying a contrast enhancing fluid.

147. A method for fluid supply according to claim 144 and wherein said supplying a fluid comprises supplying an antiseptic fluid.

148. A method for fluid supply according to claim 144 and wherein said supplying a fluid comprises supplying an acidic solution.

149. A method for fluid supply according to claim 144 and wherein said supplying a fluid comprises supplying a basic solution.

150. An endoscopy method comprising:

providing an endoscope tube having an instrument channel and an endoscope tool arranged to travel along said instrument channel to a utilization location forward of said endoscope tube, said endoscope tool being slidably and sealingly located within said instrument channel; and

selectably pressurizing said instrument channel for providing fluid driven desired positioning of said endoscope tool along said instrument channel.

151. An endoscopy method comprising:

providing a tube having at least one lumen and an endoscope tool arranged to travel through said at least one lumen, said endoscope tool including a stretchable selectably inflatable anchoring balloon; and

anchoring said endoscope tool forward of said tube within a tubular body portion by inflating said anchoring balloon into anchoring engagement with an interior wall of said tubular body portion.

152. An endoscopy method comprising:

providing a tube having at least one lumen and an endoscope tool arranged to travel through said at least one lumen, said endoscope tool being selectably bendable forwardly of said tube; and

selectably bending said endoscope tool forwardly of said tube.

153. An endoscopy method according to claim 152 and wherein said endoscope tool includes a stretchable selectably inflatable anchoring balloon and wherein said method also comprises:

anchoring said endoscope tool forward of said tube within a tubular body portion by inflating said anchoring balloon into anchoring engagement with an interior wall of said tubular body portion.

154. An endoscopy method according to any of claims 151 – 153 and also comprising:

sliding said tube forwardly along said endoscope tool, thereby employing said endoscope tool as a guide.

155. An endoscopy method according to claim 154 and also comprising, prior to sliding said tube forwardly, the step of tensioning said endoscope tool.

156. An endoscopy method according to any of claims 151 – 155 and also comprising the steps of sequentially repeating at least two of said anchoring, tensioning and sliding steps.

157. An endoscopy method according to any of claims 151 – 156 and wherein said tube comprises an endoscope tube.

158. An endoscopy method according to claim 157 and wherein said at least one lumen comprises an instrument channel.

159. An endoscopy method comprising:

providing an endoscope tube having a first stretchable selectably inflatable anchoring balloon adjacent a forward end thereof and an endoscope tool having a second stretchable selectably inflatable anchoring balloon adjacent a forward end thereof; and

positioning said endoscope tool at a utilization location forward of said endoscope tube.

160. An endoscopy method according to claim 159 and also comprising:

prior to said positioning, inflating said first selectably inflatable anchoring balloon on said endoscope tube within a tubular body portion for anchoring said endoscope tube to an inner wall of said tubular body portion;

subsequent to said positioning, inflating said second selectably inflatable anchoring balloon on said tool forward of said endoscope tube within said tubular body portion for anchoring said endoscope tool to said inner wall of said tubular body portion;

thereafter, deflating said first selectably inflatable anchoring balloon; and

advancing said endoscope tube over said endoscope tool by employing said endoscope tool as a guide.

161. An endoscopy method according to claim 160 and also comprising bending said endoscope tool when it is forward of said endoscope tube and prior to inflating said second selectably inflatable anchoring balloon.

162. An endoscopy method according to claim 160 and also comprising the step of sequentially repeating at least two of said inflating, positioning, deflating and advancing steps.

163. An endoscopy method according to claim 161 and also comprising the step of sequentially repeating at least two of said inflating, positioning, bending, deflating and advancing steps.

164. An endoscopy method according to any of claims 159 - 163 and wherein said positioning of said endoscope tool comprises passing said endoscope tool through an instrument channel of said endoscope tube.

165. An endoscopy method comprising:

providing a locomotive endoscope including a locomotive endoscope head and an endoscope body;

providing locomotion of said locomotive endoscope head through a tubular body portion;

anchoring said locomotive endoscope head at a desired location in said tubular body portion; and

displacing an endoscopy tool along said endoscope body to a desired tool operation location.

166. An endoscopy method according to claim 165 and also comprising tensioning said endoscope body following said anchoring of said locomotive endoscope head and prior to said displacing said endoscopy tool.

167. An endoscopy method according to either of claims 165 and 166 and also comprising, prior to said anchoring, the step of detecting said desired location in said tubular body portion by use of at least one light source and at least one imaging sensor associated with said locomotive endoscope head.

168. An endoscopy method according to any of claims 165 – 167 and also comprising, prior to said displacing said endoscopy tool, the step of detecting said desired tool operation location in said tubular body portion by use of at least one light source and at least one imaging sensor associated with said locomotive endoscope head.

169. An endoscopy method according to any of claims 165 – 168 and wherein said displacing said endoscopy tool comprises sliding an overtube associated with said endoscopy tool over said endoscope body.